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# CANADIAN GEOGRAPHICAL JOURNAL

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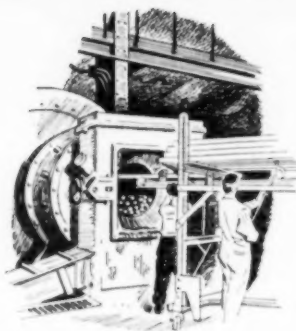
VOL. XXXIV No. 4

APRIL 1947

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# CANADIAN GEOGRAPHICAL JOURNAL

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Photo by G. M. Dallyn

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## ***Reforestation in Ontario***

*by* E. J. ZAVITZ

**W**HEN WHITE MEN first entered Southern Ontario there existed a rich and varied forest growth. On the well-drained clay loam soils, maple, beech, oak and white ash were the prevalent trees, with some admixture of white pine and hemlock. In south-western Ontario such valuable hardwoods as walnut, chestnut and hickory were found. On the lighter sandy soils there was a fine hardwood growth, with a larger mixture of pine and hemlock; while on the extremely sandy soils frequently white and red pine predominated. In the lower wet lands, such as the bottom of valleys eroded by streams, there were splendid areas of white cedar, with a large mixture of birch, elm, ash, basswood, pine and hemlock.

Here, then, were timber resources of great value to the early settler. Maple and beech

for fuel and furniture; pine for hewing into beams, sills and plates for barns or houses, or shaping into form for the log buildings of those early days. Clear, easy-splitting pine and cedar were there for fence rails and shingles. Before the advent of the shingle mill, the shingle weaver plied riving tool and draw-knife, to supply the needed roof of the early building. In addition to the abundant use of wood in building, corduroy and plank roads, bridges and culverts, there was a market for the early settler in square timber of oak and pine for shipment to Britain. In the great days of the building of wooden ships, between 1812 and 1850, large quantities of the finest white pine for ship masts came to the Great Lakes ports where they were made up into rafts and floated down to Quebec for shipment.

*At top:—White spruce 2-year seedlings ready for final planting. Where sturdier plants are required they will be transplanted in the open.*



With the introduction of steam power, the railroad locomotive and steamboat consumed enormous quantities of the best maple and beech as fuel.

During the early pioneer days, wood played a very important part in the economy of Southern Ontario. The dominant thought was not forest conservation, but how the land should be cleared. The Canadian Almanac in 1856 has a well written article on the resources of Canada, in which the following paragraph occurs:

North of the 44°-30' parallel, is a mixed mineral and timber region where are millions of acres in the valleys of the tributaries of the Ottawa and the rivers flowing into Lake Huron, capable of yielding a rich harvest of lumber for a century to come.

Gradually, however, the opinion developed that the forest was being cleared with no thought of the future. On June 22nd, 1871, Sir John Macdonald, Prime Minister of Canada, in a letter written to Hon. J. S. Macdonald, Premier of Ontario, says, amongst other things: "We are recklessly destroying the timber of Canada, and there is scarcely a possibility of replacing it".

We quote from the Report of the Fruit Growers' Association of Ontario for 1879:

The Fruit Growers' Association need to put forth their best efforts to husband our Dominion and Provincial resources in their timber limits—to carefully instruct the farming community how much depends on the judicious planting of forest trees, their presence producing abundant rainfall, preserving and distributing moisture and thereby forming a preventative against drought and devastating floods.

In 1900 a forestry committee was appointed at the Ontario Agricultural and Experimental Union, an organization largely interested in the improvement of crops and general improvement of agriculture. In 1902 this committee passed a resolution, moved by Mr. Nelson Monteith of Stratford, Ontario, and seconded by Mr. E. C. Drury of Crown Hill, Ontario, as follows:

The Experimental Union, recognizing the urgent necessity for action in the reforesting of the waste lands throughout Old Ontario, would recommend that the Department of Crown Lands be requested to provide material sufficient to reforest areas sufficiently large to provide forest conditions in typical situations throughout Ontario, the Union undertaking to supervise the distribution.

By 1904 the Government decided to undertake the establishment of a forest nursery at the Ontario Agricultural College, and in 1905 a department of forestry was started, with lectures in forestry and extension work with farmers. In 1908 "A Report on Reforestation of Waste Lands, Southern Ontario" was given to the Government. This report gave a description of some of the larger areas of waste lands and presented some of the arguments in favour of putting these lands under forest management.

Southern Ontario has been cleared and tilled for less than one hundred and fifty years—a short space in the life of a nation—and yet we are confronted with many serious problems of soil and water, owing to the lack of forest cover.

The woodlands, which are to a great extent composed of farmers' woodlots, are gradually disappearing. Today 135 townships have less than five per cent, and Southern Ontario less than ten per cent of woodland. Much of the remaining woodlands are run out and are by no means in a productive condition.

Thousands of acres of submarginal lands exist which have become a menace, lying idle and unproductive. They are a burden to the municipalities, having small assessable value. These areas, under forest management, could solve many of the problems of soil protection and water supply and be made of value.

Perhaps the most serious effects are those relating to water conditions, as a large proportion of the denuded areas are situated on watersheds of our many streams and rivers. Dried up streams and springs, the lowering of the ground water affecting agriculture, and the droughts and floods have awakened the public to the necessity of taking effective action.

During the past decade a vital factor in arousing public opinion has been the Ontario Conservation and Reforestation Association, which is composed of municipal officers and leading agricultural representatives, under the enthusiastic leadership of Mr. Watson H. Porter, of London.



### *Education*

Practical reforestation has been introduced in rural schools. Trees for home planting are distributed to pupils, with advice as to their care, and in some cases school forests have been established. The school section or municipality provides some two to five acres of land which the pupils plant under instruction. An annual school forest competition is sponsored by the Ontario Horticultural Association, with prizes for the winning schools.

Previous to the war, the Boy Scouts were organized to plant forests in Norfolk and Simcoe Counties. In Simcoe County camps were established at Angus where, over a period of several years, more than a million and a half trees were planted on lands provided by the county and forming a part of their municipal forest. In Norfolk a similar program was carried out. It is hoped that this Boy Scout work will be revived when planting materials become available.

Officers of the Department of Lands and Forests disseminate information by means of

*At top:—Sand dunes encroaching on a country road. Reforestation would correct this condition, as has been demonstrated in many parts of Ontario.*

*Right (top):—"The Ridges" in the Ganaraska watershed, Durham County. A river started here.*

*Right (bottom):—Sand dune being held by fences. Eventually trees can be established in the lee of fence.*





lectures, radio addresses and bulletins. Field Officers, Zone Foresters and District Foresters make contact with schools, farmers' clubs, service clubs and county councils to advance the cause of conservation and reforestation. But the establishment and development of thousands of forest plantations adjacent to many Ontario highways has probably created more interest in this work than any other factor.

#### *Provincial Forest Stations*

The policy of establishing Provincial Forest Stations, in areas containing large tracts of submarginal lands, was inaugurated in 1908, when the field work in forestry was transferred from the Ontario Agricultural College at Guelph to South Norfolk, near the village of St. Williams.

This Provincial Forest Station was established with the thought that suitable forest



*Above:—Sand plains, Prince Edward County. Once covered with forest, these sands are now a menace to adjacent farms.*

*Right:—Norfolk Provincial Forest Station 1909, showing remnants of original white pine forest.*

*At top:—Abandoned farm in Norfolk County, 1906. Now part of the Norfolk Provincial Station covered with pine forest.*

*These sand lands may be successfully reforested, as seen in photos on pages 172 and 173.*





nursery soils could be found, and adjacent areas could be secured which would lend themselves to demonstrations of reclamation work and future forest management. Nursery work being seasonal, the adjacent reforested areas make it possible to keep a permanent trained nursery staff, the care and management of the young forests providing winter employment.

In many European forests there is permanent employment for an average of one person for every hundred acres of forests.

It may be of interest to point out that in

1908 the general public was sceptical of the possibility of reclaiming, to forest, these worn-out blow-sand areas. Today, thirty-five years later, the Norfolk Provincial Forest Station of 3,800 acres presents a magnificent young forest of pine and other species. This Station also maintains a small saw-mill, in which thinnings from improvement cuttings are being manufactured into materials for local use. The forest nurseries (200 acres) at this Station have provided many millions of trees for Ontario.

Thousands of visitors come to this beauty





*Provincial Forest Tree Seed Station established in 1923 at Angus, Ontario.*

spot, and a small park is provided for their accommodation. In the past, many officials of municipal and other organizations, from all parts of the province, have come to this place and returned convinced that all waste areas of the province should be reforested, and so made useful and beautiful.

In 1922 two new Forest Stations were established, one at Midhurst near Barrie, in Simcoe County, (2,200 acres); and one at Orono in Durham County (700 acres). They follow the pattern of the early Provincial Station in Norfolk. Both are in the vicinity of large areas of poor sandy soils, which have proved a failure for agricultural crops.

A new Provincial Forest Station is now being established at Kemptville, on the Rideau River, which should serve the eastern part of Southern Ontario. Fifteen hundred acres of suitable soils have been secured, in the vicinity of considerable areas of submarginal land.

#### *Seed Collection*

The securing of forest tree seed is basic and vital to any reforestation program. About eighty-five per cent of the forest nursery stock required for planting on waste sand areas and submarginal lands is of the coniferous type, that is, the pines and spruces. These familiar cone-bearing trees, produce the seed which we require for the production of forest planting stock. The cone opens in the autumn while still on the tree. The seed is released and falls to the ground, or is carried by the winds for considerable distances. Cones must be collected from the trees before they open, yet they must be mature.

Abundant crops of cones do not occur every season, but vary considerably—red pine 5 to 7 years; white pine 2 to 5 years; white spruce 2 to 5 years. There is also regional variation due to weather or climatic



conditions. The problem is to secure good supplies of seed in the prolific years. With proper storage conditions, seed may be held for several years with good viability.

The headquarters of the forest tree seed work is located at the Provincial Forest Seed Station at Angus, where cones are stored and processed. After summer scouting, to locate good crop areas, arrangements are made for the collection of the cones. The cones are picked by crews under government supervision, or by arrangements with private pickers who gather them under a permit system and deliver them to centres where they can be temporarily dried for shipment to Angus. Local pickers receive from \$1 to \$3 per bushel, depending upon the abundance of the crop. Cones should produce approximately the following amounts of seed per bushel:

White pine —16 ounces, or 30,000 seeds  
Red pine —12 ounces, or 38,000 seeds  
White spruce—16 ounces, or 200,000 seeds

Visitors to Angus will find a very interesting station. There are buildings with open sides to allow preliminary air drying of cones, which are placed in racks with screened bottoms. Trays in these racks allow free circulation of air. It is important to allow the cones to dry and mature without heating and mildewing, as would happen if they were piled in bags or bins. The storage buildings have a capacity of around 25,000 bushels.

During the autumn and winter the cones are taken to the extracting house where the seed is obtained by opening the cones with artificial heat. After extraction, the seed is cleaned of wings and other foreign matter, then dehydrated to a given moisture content and stored in glass containers. It is found that proper moisture content must be assured to keep seed viable for several years. The seed containers are then stored in vaults which are thermostatically controlled at about 36° Fahrenheit. This storage allows stocks collected in good crop years to be kept for succeeding years. Before sending the seed out to the various nurseries, germination tests are made to establish the amount of seed required to assure full seed beds.

*Collecting white spruce cones in autumn*



*Forest Nurseries*

The essentials for a successful forest nursery, where large quantities of planting stock are to be grown for local use and for shipping to outside points, are as follows: A well-drained sandy loam soil; a source of local labour; a good supply of water; and shipping facilities in the vicinity. These points may be self-evident but it may be well to emphasize two of them. The reforestation projects on submarginal lands to a large extent require coniferous species such as pine and spruce. Well-drained sandy loam provides the best type of soil, for various cultural reasons. A good water supply is necessary for such soil, and for the climate of Ontario, where occasionally serious droughts are apt to occur just as the small shallow-rooted plants like spruce and pine are starting to develop.

The growing of hardwoods such as maple, elm, ash, etc., does not present the difficulties which confront the nurseryman in the growing of conifers.

In the provincial nurseries, seed bed areas are laid out in unit beds of 4 by 30 feet. The seeds are sown and covered lightly by sifting soil over them. The beds are covered with shades of lath, woven into 30-foot lengths. These shades are woven with a spacing to give about half light. With such species as spruce and cedar more shade is desirable and the laths are more closely woven.

*Right:—Preliminary drying of cones in the sun*  
*Below:—Sacks of cones arriving at Angus from outlying points*

When the small plants appear, great care must be exercised to prevent "damping off" on humid hot days and, on the other hand, to prevent sun scorch on extremely hot sunny days.

The seedlings remain in the seed beds two years and are then transplanted into open beds, or nursery lines. They are left in the nursery lines for one to two years, depending on the species. The aim is to produce a stocky plant with a good root system, and not a spindly or large top. It is possible to develop some species in the seed beds in two years, ready for final planting.

*Distribution of Trees to Private Landowners*

Free distribution of trees to private landowners started in 1905, with an output of 10,000 trees. By 1914 this reached a half million trees. By 1939 the output was between 7,000,000 and 8,000,000 trees. This last year (1946) 8,000,000 trees were sent out to private landowners. Up to and including 1946, some 350,000,000 trees have been distributed to private individuals.

On a cross-section study made of the results of this distribution, it was found that on private planting a very large percentage of loss had occurred. This was especially true of those trying to develop hardwood plantations on heavy clay soil. The losses sustained are attributed to a large number of causes, the outstanding being improper





*Original forest tree nursery of 2 acres at Ontario Agricultural College, 1905.*

or careless planting, grass and weed competition, along with loss from rodents such as mice and rabbits, and a large percentage of loss from grazing.

It should be emphasized that the successful distribution of forest trees, and their proper development, is dependent on correct planting plans being made, through experienced forest officers or trained men in the field.

An important development in the reforestation policy for older Ontario is the placing of Zone or District Foresters in centres throughout the southern portion of the province. Forestry, like agriculture, deals with the best use of the soil, and better

results will be achieved by landowners consulting District Foresters on their own property, than by obtaining advice through letters or bulletins from head office in Toronto. In most cases, assistance on problems dealing with forestry can only be given by personal contact and inspection on the ground. Offices for Zone Foresters or District Foresters have been established at Chatham, St. Williams, Stratford, Galt, Owen Sound, Richmond Hill, Lindsay, Tweed, Napanee and Kemptville.

#### *Planting Operations*

The trees used in reforestation projects are small seedlings, or transplants, from ten



*Below:—Coniferous seed stored in glass jars in vaults. Temperature is maintained at about 36°F.*





to eighteen inches in height, with well-developed roots and not too large a top. Such small forest nursery stock can be planted at a low cost and with a large percentage of survival.

The trees are shipped from the nurseries or the recipient calls at the nursery with truck or car and takes delivery there. In shipping, the roots of the plants are protected with damp moss. Upon receipt of the trees they should either be planted at once, or "heeled in", that is, the roots placed in a trench and covered with moist soil. Extra care should be taken to protect the roots from sun and wind. The trees are usually carried along the planting lines in pails or tubs, with the roots immersed in water. Preparation of the soil is done by running shallow plough furrows where the land is fairly level. On hillsides, rocky outcroppings, or underplanting, where the plough is not feasible,

spot planting is the method employed. This involves removing a section of turf with spade or mattock and preparing the spot in which to plant the tree. The aim is to place the small tree in soil where it will not have too much competition from grass and weeds in obtaining moisture. The actual planting is best done by two persons; one with a spade or shovel to make the hole, and the other carrying the trees in a pail or tub and placing them in the opening.

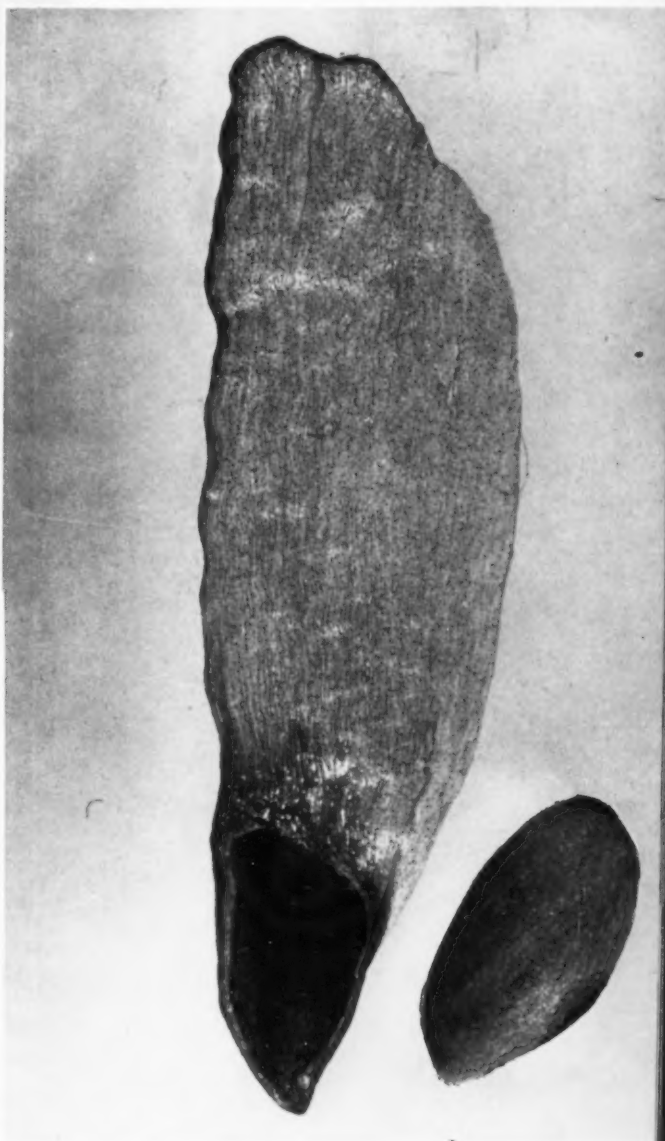
With the increase of planting on a large scale, mechanical equipment is being introduced. Several types of planting machines have been developed in the United States, and the Ontario Department of Lands and Forests has developed and tried out machines of this character. Space does not allow a detailed description, but the principle of this equipment is similar to that used by tobacco planters. At one time an acre of





*Left:—White pine cones on tree although seed has left the cone. Note small one-year-old cones at tip; they require two seasons for development. (Cones about half actual size)*

*Below:—At left pine seed with wing attached. At right seed after cleaning, ready for storage. (Enlarged 14 times)*



land could be planted, in favourable sites, for from \$6 to \$8, with competent labour, but today the cost, depending on the site and labour, runs from \$12 to \$18 per acre. It is felt that the introduction of mechanical equipment will reduce the initial planting costs and result in a much higher percentage of survival.

#### *Municipal Reforestation*

Upon the creation of a forestry department at the Ontario Agricultural College, Guelph, the early efforts in reforestation were directed to the improvement of farmers' woodlots and the supplying of forest planting stock for private landowners.

While the improvement of private woodland conditions, and the reforestation of idle or waste lands on the farm were important, there was a larger problem referred to by Mr. E. C. Drury (Premier of Ontario, 1919-23), at the 25th Annual Meeting of the Ontario Agricultural and Experimental

#### *Union at Guelph, 1903, as follows:*

There are acres and acres of waste land scattered among the farming land in some parts of Simcoe County, and in other counties. It is not of much value agriculturally, but it was once covered with a good crop of small pines. This land was cut over carelessly and burned, the means of reforestation

*Left:—Red pine cones on racks in heated extracting chambers*



*Preparing coniferous seed beds*



*One-year-old seed beds at Orono Provincial Forest Station. Inset shows close-up of seedlings.*



*General view of 2-year-old coniferous seed beds with overhead water system. Provincial Forest Station, Norfolk, 1926.*



*One-year-old black  
walnut seedlings*



*Above:—Millions of red  
pine transplants ready  
for final planting on the  
waste lands of Ontario.*

*Four-year-old white  
spruce transplants*





*Above:—Boy scouts planting at Angus Municipal Forest, Simcoe County.*

*Left:—Boy scouts visiting the plantation ten years after their planting work.*



*Extreme left:—White pine at four stages of development. Left to right: 3-year-old transplant; 2-year-old; 1-year-old and six-weeks-old seedling. (Reduced 8 times)*

*Left:—Boy scouts planting at Angus Municipal Forest, Simcoe County.*



*Furrow-planting on city of Guelph waterworks property, 1909*

were destroyed, and much of it is now entirely waste. These areas could be reforested with great advantage, and our motion was that the Government should allow us to experiment with one such area, in the hope of inducing the municipalities to take hold of the matter. I still think that this is a matter that is worth attention.

The idea of municipal or communal forests was not new at that time. In Europe communal forests have existed for several hundred years. Perhaps one of the best known to forestry students is that of the Swiss city of Zurich. Zurich has a municipal

forest of 5,000 acres, which has been under management for over six hundred years, paying net annual revenues up to \$15 per acre. Many such examples could be cited in Scandinavia and other parts of Europe. In most of these European municipal forests the net revenues assist in maintaining public works and lessen the burden of municipal taxation.

In 1911 the Ontario Legislature passed an Act entitled "The Counties' Reforestation Act". While this Act remains the same in general principle, there have been amend-







**2,200-acre Demonstration Forest  
at  
Provincial Forest Station, Midhurst  
(established 1922)**

*Left (bottom):—As the forest appeared three years after planting.*

*Left (top):—Air view taken in 1946 when trees were nearly 30 years old; nurseries in background.*

*Above:—Close-up inside view of plantation, the red pines now twenty to twenty-five feet high. Compare with photographs on pages 160 and 161 showing similar sand land, before planting operations.*

ments from time to time. (Ontario Statutes 1939, c. 11; 1945, c. 14; 1946, c. 62) The present title of this Act is "The Municipal Reforestation Act", and it now empowers any municipality to carry on reforestation projects.

The municipality may purchase the land, carry on development and management of these areas, and either enter into an agreement with the Crown, or carry out the planting and care without this agreement. All by-laws pertaining to the purchase, management, or subsequent sale of such lands require the approval of the Crown, as

represented by the Minister of Lands and Forests.

Although this legislation was enacted in 1911, it was not until 1922 that advantage was taken thereof. In 1922 the County of Simcoe initiated the program of municipal forestry by securing 1,000 acres, now known as the Hendrie County Forest. This tract has since been enlarged to 2,400 acres.

Under the provisions of the above Act, municipalities may enter into an agreement with the Crown to take over the development and management of the forest. Upon the county purchasing the land, the Crown



YORK COUNTY  
MUNICIPAL  
FOREST

Stages of Development

*Above:—Plantation of red pine, 5 years old (photo taken in 1924).*

*Below:—Same plantation 3 years later.*



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*Above:—Same plantation—20 years old. Thinning operations, harvesting pitprops and fuel wood. Right: —Crop of pitprops, from thinnings, for shipment to Britain.*





*Red pine plantation at Rockland, Ontario, planted by the late Senator Edwards in 1914. This plantation has an annual wood crop of over one cord per acre.*

First, the municipality and the Crown may renew the thirty-year agreement, sharing equally in cost and profit thereafter. Secondly, the municipality may take over the project, paying the Crown the cost, without interest, of the development; less monies, if any, received by the Crown out of said lands. Thirdly, the municipality shall grant and convey said lands to the Crown, upon payment of the purchase price, without interest.

Twelve counties have acquired land under the above Act since 1922, and entered into an agreement with the Crown for its management. The counties have acquired land as follows: Bruce 5,000 acres, Prescott and Russell 10,000 acres, Simcoe 9,500 acres, Victoria 3,600 acres, and York 2,700 acres. The following counties have acquired 1,000 acres or more: Northumberland and Durham, Dufferin, Grey, Leeds and Grenville, Lanark, and Ontario.

administers the property for a period of thirty years. At the end of such time there are three available options, as follows:

Two counties have acquired over 1,000 acres, but are not under agreement with the Crown as regards management—Norfolk

*Forest field days are held when visitors are taken through the plantations.*



1,500 acres, and Peterborough 3,000 acres. In these cases the Crown supplies the trees free and endeavours to give technical advice when required.

Twelve other counties have acquired smaller areas. In all, twenty-six counties have made a real start in the undertaking of municipal forestry work.

A few urban municipalities have carried out reforestation in connection with the lands protecting their water supply. Guelph planted areas about the springs at the source of their water supply as early as 1909. Beeton, Hanover, St. Thomas, Woodstock, Orangeville and Midland have carried out reforestation to protect the areas about their water supplies.

Municipal forestry has paid good dividends in Europe, both in wood crops and through indirect benefits such as water control and protection.

Growth studies have been made in a number of the oldest plantations, and we are assured of an annual increment of at least one cord of wood per acre, or an annual rental of \$3 per acre. These growth studies indicate that an acre of red pine in forty to fifty years should be worth at least \$300, at present stumpage values, for telephone or hydro poles. It seems evident that the future will provide markets for everything that can be taken out, when the first thinnings occur in twenty to twenty-five years.

In looking over some very poor sandy lands with a prominent municipal officer, in connection with adding to the present municipal forest, it was explained that the financial aspect of the problem appeared very safe; whereupon the municipal officer said, "I am not interested very much in the value of the forest products which may accrue in the future. My chief concern in this

*Red pine plantation (28 years old) at Norfolk County Provincial Forest Station.*





matter is covering this watershed, with its idle and worthless soil, with a green forest which will help to keep the wells and springs of the adjacent farm lands from drying up every summer."

*Crown Lands in Northern Ontario*

The Crown land forests of Northern Ontario present a difficult regeneration problem. A large percentage of our northern forests on the Laurentian Plateau have developed on thin glacial soils, with rocky outcroppings. These areas, with the accumulation and addition of vegetable mould or humus over countless ages, were able to maintain a satisfactory forest cover.

Where repeated forest fires have occurred, desirable new growth can only be expected when new soils have developed. The seriousness of such fires is not in the timber lost at the time but in the deterioration and loss of humus or vegetable soil.

One cannot formulate a policy of artificial

reforestation or forest protection in Northern Ontario by comparing our problems to those of the century-old managed forests of Scandinavia or Europe. In the Northern Ontario forests, unlike those in Europe, there exist numerous weed trees and shrubs which compete with the valuable species for possession of the soil, especially after timber operations or forest fires. Furthermore, our forests are composed of a number of coniferous species of pine, spruce, hemlock and cedar, whereas foresters of northwestern Europe, to a great extent, are dealing with only two important species, Scots pine (or Baltic fir) and Norway spruce. Scots pine is a prolific seed-bearer and natural regeneration is usually easily obtained. High humidity in northern Europe is also a favourable factor, both in natural regeneration and forest fire protection.

With these considerations in mind, it is felt that any comprehensive program in connection with artificial regeneration in

*Hardwood, maple and ash plantation at Orangeville, Ontario. Stand about 30 years old.*





*Simcoe County Municipal Forest at Hendrie. Portions of this forest are composed of hardwood trees, shown in upper left and lower right of photo.*

Northern Ontario should be determined only after certain basic data are obtained. Studies are required to be made on cut-over and burnt-over lands to ascertain not only what has happened in the past but what may be expected from *natural* new growth. Demonstration and experimental forest planting needs to be carried out on areas or sites which have high soil value and where reasonable protection from forest fires is ensured.

There are a number of demonstration plantations in the Northern Ontario region which will be of value in securing some of the research data requisite for future planting operations. An example is the Kirkwood Management Unit of about 25,000 acres north of Thessalon (near Sault Ste. Marie). This area of sand plains contains some very good stands of pine and spruce; planting started in 1928 and now occupies 6,000 acres. Another area is being reforested in Nairn Township, west of Sudbury.

In 1946 a forest nursery was established near Fort William. This nursery is being developed with a view to supplying suitable planting stock for northwestern Ontario.

#### *Conclusion*

Ontario has had forty years' experience of free tree distribution to private landowners, and twenty-five years of cooperative effort in municipal reforestation projects. Private landowners have successfully planted not more than 150,000 acres, while municipal projects will account for an additional 50,000 acres.

Various estimates of the amount of sub-marginal or waste lands have been made; we know that there are over one million acres of such lands which—if further development of barrens is to be prevented—should be put back under forest. One only needs to follow the sandy ridges paralleling Lake Ontario, (formerly the beaches of pre-glacial Lake Iroquois) and extending from North York across Ontario, Durham and

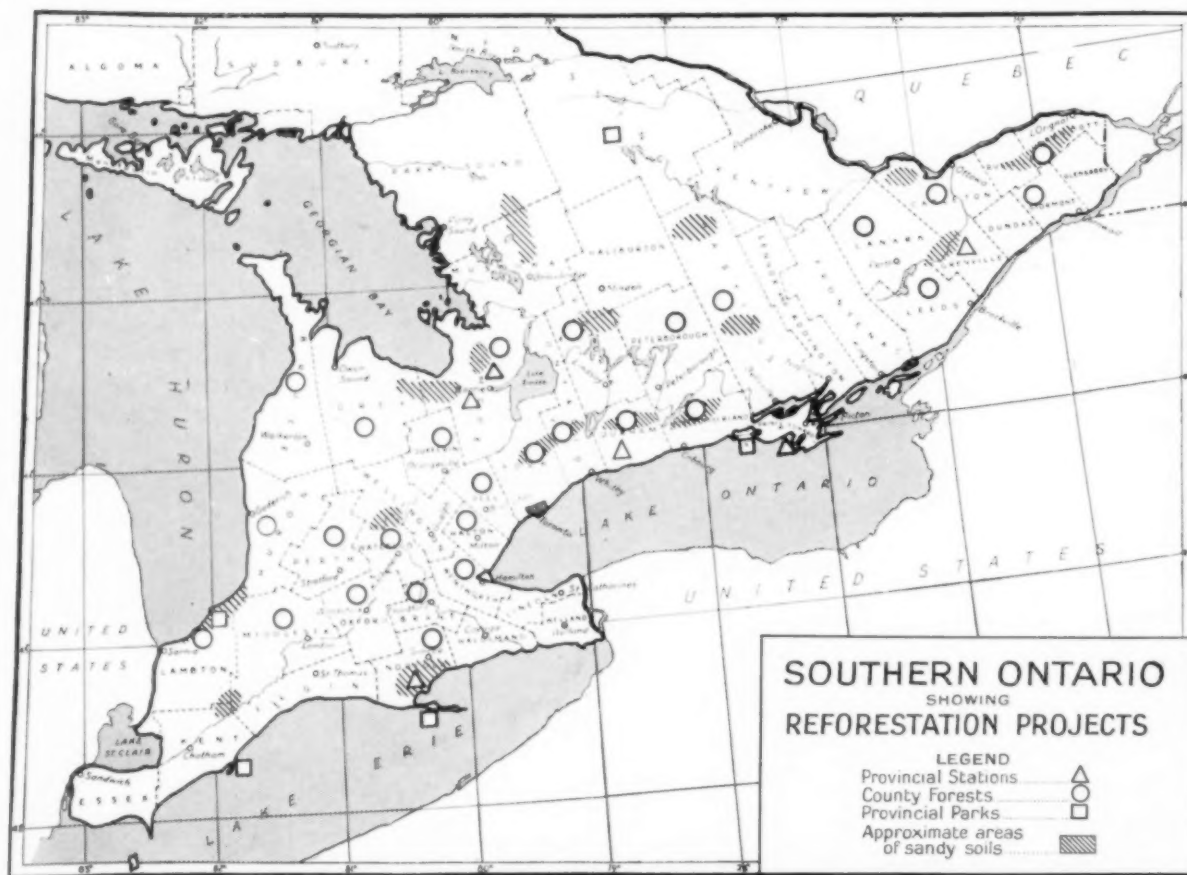
Northumberland counties, to visualize the need, as this belt alone represents at least 200,000 acres of submarginal lands.

Private interest in conservative forest management is generally insufficient to be relied upon for taking care of public interests, except under the stimulus of government aid or of government restrictions. Thus, the public must take care of its own interests and this demands a long-term viewpoint and is best realized by State or municipal ownership. There is at the present time, an awakened public opinion sufficient to support a comprehensive policy of reforestation. There exist also sufficient data (in the many forest plantations throughout the Province of Ontario) to demonstrate the soundness of

the investment, even if only one economic factor, wood crops, were considered as an ultimate objective.

But there are other factors of prime importance:—

Reforestation these waste areas will assist in protecting the sources of wells, springs, and streams; will ensure an improved ground water supply, so important to agriculture; will prevent futile attempts at farming; will convert ugly barrens into regions of beauty available for the recreation of residents and the enjoyment of visitors. Finally reforestation of these waste areas will provide work even in the early reclamation stages, and will be a continuing source of healthy employment.



Canadian Geographical Journal map



# The Prospector

by S. C. ELLS

From the earliest times—and often in the face of brutal intolerance and gross superstition—man has sought to peer beyond horizons, to open closed and guarded doors. His search for the truth has extended to many fields—religious, social and political, and is still far from completion. But in the material world, and frequently as the result of mineral production, research has unlocked many of the closed doors.

In the discovery of minerals the prospector has played an important part. Early recorded references to prospecting—chiefly for copper, precious metals and precious stones, and notably within areas tributary to the Nile valley and the Red Sea—antedate the beginning of the Christian era by not less than three thousand years. The legend of Jason and his band of Argonauts in search of the Golden Fleece suggested a prolific theme for sagas by early Greek and Latin poets and historians.

In his informative and engrossing book *The Romance of Mining\**, Rickard refers to prospectors as advance guards of armies of miners. He also traces the history of certain outstanding examples of mineral development and the relationship of prospectors to such development. Clearly it is a far cry from those early days when the “prospector” depended for success on invocations to mythological deities, to our present-day dependence on geological science, scientific instruments and the diamond drill.

\*The Macmillan Press, 1944



Mining history is replete with almost legendary tales relating to the fortuitous discovery in the past of important mineral deposits. Many such tales must be accepted with reserve, but it may be assumed that with the passage of time, the more readily recognized ore deposits have now been discovered. Consequently, and in order to have a reasonable chance of success, the prospector of today must have scientific training and technical knowledge of a relatively high order. In addition to these qualifications, the prospector also requires a practical knowledge of woodcraft and he must possess moral and physical courage and a determination to persevere in the face of hardship and discouragement.

In the past the work of the prospector has constituted an important factor in the evolution of the mining industry. With adequate preliminary training, and with assurance of a reasonable return from any discoveries they may make, our prospectors should play an even more important role in the perpetuation of one of our most important industries.

*By lofty pass and empty plain, in silent,  
shadowed vale,  
By shimmering lake and nameless stream, by  
many a winding trail,  
Men of the North are on the march; over the  
lonely hills  
Comes muffled thud of bursting charge, of  
sledge on tinkling drills,  
While wisps of smoke at break of day, by night  
the camp fires' glow,  
Marks the advance to new frontiers,—where  
waters northward flow!*





## ***England's Rural Craftsmen***

by W. H. OWENS

**M**ANY OLD-TIME craftsmen are still working in the villages and woods of the English countryside today. They carry on a tradition that goes right back to Saxon times, using the same primitive tools and methods that were used by their ancestors. In tiny workshops that have been run by one family for generations, one may find the same superb skill and pride in workmanship which brought England's craftsmen fame in the days when everything was made by hand.

Although English agriculture is largely mechanized now, there is plenty of work for these craftsmen to do. They make the hurdles, baskets, wagons and other equipment which every farmer needs, and likes to buy near at hand. They thatch the roofs of

cottages and barns, and keep the hedges and stone walls around the farms in good repair.

Some craftsmen also produce artistic wares for domestic use which are sold not



*At top:—Basket-making on King's Sedgemoor, Somerset*

*Right:—A ladder-maker fitting the rungs*

*The bowl-turner of Bucklebury Common, Berkshire, with two of his elm bowls*

only in towns and cities throughout the British Isles, but to buyers in many parts of the world.

Basket-making is one of the oldest surviving crafts of England. It is carried on in many villages where different types of baskets are made according to local custom and requirements. A flourishing centre of the industry is the Sedgemoor district of Somerset, the home of skilled basket-makers since the days of King Alfred. The willow trees growing along the numerous dikes and streams provide some of the best material.

Willow rods are cut with a sickle during the winter months and are then tied in bundles and placed in shallow water pits to make them soft for stripping. This is done by pulling each rod sharply through a two-pronged metal fork, known as a "brake". Then, in late spring, the peeled rods are spread out in the sunshine to dry. It takes several weeks for the wood to mature thoroughly, and artificial drying methods are never used because this would spoil the quality of the rods and make them less pliable.

Craftsmen fashion baskets of various shapes and sizes on flat boards into which twenty or forty upright rods are fixed. Then they deftly weave the horizontals tightly between, so that the basket stands firm and strong when the board is removed. The work is mostly done in brick sheds lighted by oil lamps, which keep the willows at an even temperature and prevent splitting.

In the fruit valleys of the Cotswold Hills



huge quantities of straw-plaited baskets are made every season. Sussex craftsmen specialize in a long shallow basket called a trug which is used by local market gardeners. These consist of thin willow boards, shaped with a knife, and steamed and bent into a circular frame of ash or chestnut cleavings. Heavy types of agricultural baskets are made in the Fen Country of eastern England with the pliant leaves of water rushes, plaited or wrapped. They have the same soft coiled appearance as the rope baskets made by English fisherfolk, and though they contain no wood they stand up to several years of rough wear.

Many craftsmen still lead solitary lives in the woodlands, making all kinds of useful articles from rough timber. With a few tools of the simplest kind they fashion hurdle fences and sheep cages, farm ladders, wheelbarrows, hay-rakes and barrels. Most of the work is done in the open throughout the



*Making stakes in a Kentish wood near Canterbury*





*Thatching a cottage in the village of Great Comberton, Worcestershire*

## ENGLAND'S RURAL CRAFTSMEN

year, but the men build themselves lean-to sheds or shacks where they can carry on in bad weather.

The hurdle-maker uses a curved wooden beam, about six feet in length, as a frame. Into this holes are bored at regular intervals and these take the upright stakes round which the hurdle is to be woven. Smooth hazel rods, split with an axe, are then fitted between and around the uprights and row after row thrust down firmly with the foot or knee. About halfway through a space is left so that the shepherd can lift the hurdle easily or carry a load of them on a stake over his shoulder.

In the Chiltern beech woods of Buckinghamshire one finds the "botchers", an ancient race of wood-turners whose ancestry is now forgotten. Like their forefathers, they spend most of their time in little portable huts which they move about the forest clearings in the wake of felled timber.

Inside each hut is a primitive type of lathe around which a stout cord is fastened, one end being tied to the foot treadle and the other to a springy alder sapling fixed to the roof. The craftsman places his block of wood in the lathe and, by working the treadle, sends it spinning round at the required speed. Then he skilfully cuts and trims it to shape with an assortment of knife-blades. On this strange contraption generations of "botchers" have carved fine table and chair legs for the local furniture industry.

A similar pole lathe is used by an old wood-turner in Berkshire, who fashions sets of decorative bowls out of elm wood. He is the last of a colony of craftsmen who specialized in this ware which, before the advent of cheap crockery, was used in most country homes. By the use of ingenious knives, mostly native to his particular craft, he can cut several bowls from a single block of wood. One knife makes a deep concave cut in the wood for the smallest bowl. Then it is applied at increasing distances from the centre of the block to carve out two or three bigger bowls, each one outside the other.

It is still a local custom for sets of these elm bowls to be given to a village bride on her wedding day, but the craftsman's attractive ware also goes much farther afield nowadays since it has decorative value for the home.

Thatching is the most picturesque of all England's old rural crafts. In recent times the number of skilled thatchers has declined, for there are not enough young apprentices to take the place of men who are past working age. But their services are in great demand, and some of the older craftsmen often travel hundreds of miles about the countryside each year to make new roofs for farmhouses, cottages and barns.

Hardly any two English thatchers use exactly the same methods, for their ways of decorating and finishing a roof vary according to long-established custom in each locality. A thatched roof laid by an expert will last fifty years or longer, remaining quite waterproof all that time. Much depends on the careful selection and drying of the



*A village thatcher at work on a cottage roof at Uffington, Berkshire*



*A Surrey hedge-cutter at work in the Boxhill district*

But it is the finishing touches to the work that shows the thatcher's individuality. Going from one part of England to another, one notices the variety of styles used by generations of these craftsmen. Sometimes the roof is finished off quite flush with the eaves, but elsewhere it overlaps them by as much as two or three feet on every side. In the West Country, thatchers weave their material in sweeping curves round the upper windows, a most attractive style that protects the walls but also allows plenty of light into the rooms.

The green hedges that chequer the face of the English countryside keep another group of craftsmen busy through many months of the year. Since the prime purpose of these hedges is to prevent livestock straying and trespassing, they must be made impenetrable as well as straight and pleasing to look at.

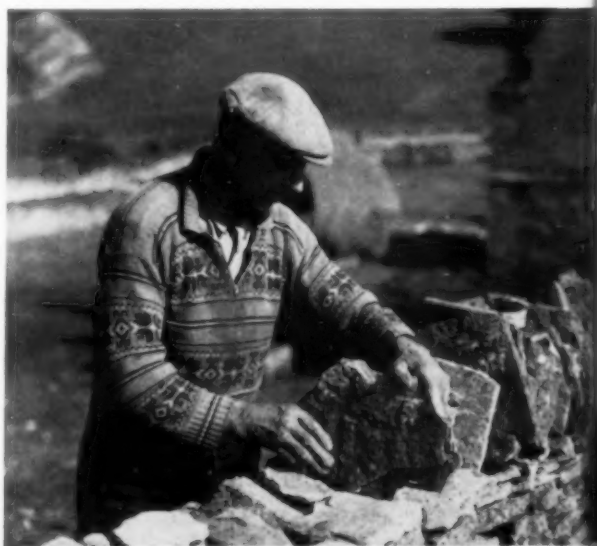
Every skilled hedger has his own methods and tricks of pruning to make the foliage grow thicker. In the early months he goes around the farms closing the gaps torn by cattle and horses. Then when autumn comes, he attends to the important task of clearing away dead undergrowth from the ditches to prevent winter flooding of fields and lanes. Most of the work is done with the traditional sickle.

In the north of England, where low stone walls usually take the place of hedges, men are constantly keeping these walls in perfect repair and building new ones for the moor-

material, which may be straw or reeds, and the way it is laid on.

The thatcher usually works from the eaves to the ridge of the roof, laying the "yelms" of straw on bare wooden slats and pegging them down with narrow spars laid across at intervals. Using a heavy mallet studded with large-headed nails, he beats the straw down under the spars until the roof is covered evenly. One layer overlaps the other until the smooth surface reaches the ridge, which is completed with an extra layer in such a way that it cannot hold the rain. A roofing of thatch is little more than twelve inches thick, yet even a week of constant and heavy rain will not penetrate more than an inch. It keeps a house warm in winter and cool in summer.

*A stone-waller building a dry wall*





*A wheelwright at work on a heavy wagon wheel*

land farmers. They use neither tools nor binding material. Simply by choosing the right stones and placing them together like pieces in a jig-saw puzzle, they make walls so strong that these cannot fall apart unless purposely dislodged or smashed down by heavy road vehicles.

In many a village one finds the old wheelwright's shop. Though this highly-skilled craft has been much affected by the development of motor transport, the horse wagon is still used on outlying farms. For centuries the English wheelwrights have worked closely with the farmers, evolving types of cart or wagon most suited to the local soil and land contours. That individual tradition survives today, so that in almost every rural district a different style of wagon is used.

Fixing the iron tire on a heavy cartwheel is one of the many specialized jobs of the wheelwright. The tire is taken from the fire, placed on the wheel and hammered into position while it is still hot. Then buckets of water are thrown over it to shrink it against the wheel.

While most English craftsmen continue to work by exactly the same methods as their forefathers of olden days, this is no longer true of many village blacksmiths. The decline of the horse seriously threatened this famous trade some years ago and, alas, many wayside forges closed down.

The more enterprising smiths, however, have kept abreast of the times. By revolutionizing their workshops they still play



their part in the life and work of the countryside. It is not uncommon to find a centuries-old forge equipped with a modern gas-engine, a drilling machine run by a dynamo, and an oxy-acetylene welding plant. With such equipment the local blacksmith can undertake the repair and maintenance of most farm machinery.

Despite all this, the English blacksmith is still a skilled craftsman. He excels in fashioning beautiful things in iron such as park gates, grilles for cathedrals and churches, and decorative inn and shop signs. He also makes garden tools and such articles as ornamental fire-screens which he often sells direct at the markets held in the nearby towns. But his traditional work always has first call on his time. Whenever a horse is brought to the forge, all other jobs are temporarily set aside while the old shoes are removed, the hooves pared, and new shoes fitted and nailed on in the time-honoured way.

*Shrinking a tire on to a cartwheel*



## ***Paddlewheels on the St. John***

by FRED H. PHILLIPS

**O**F LATE YEARS the *D. J. Purdy* had nosed her way uneventfully into her wharf at Fredericton at the completion of each run up-river from Saint John. During the lazy summer days arrival in Fredericton would usually be toward seven o'clock in the evening and the westering sun would already be over the roof of the old Officers' Quarters, lately turned Canadian Legion, immediately inshore from the wharf. A few taxis would meet the boat, a group of summer travellers would make their way slowly toward Queen Street, a florid-faced little purser would bounce between the hold and

the warehouse, tally board in hand, the stewardess and her helper would tidy up the dining room. Another run had been completed.

River life had gone and the little crew of the one remaining vessel were but the housekeepers of a Great Departed. So Eastern Canada Coastal Steamships, at the end of the boating season of 1946, sold the *D. J. Purdy* off the River and promptly closed their books.

The great days of steamboating on the St. John River were already long since past, and in recent years the River and the

wharves had scarcely stirred as the boat tied up and the sun reddened in the west. Not since long ago was the river front at Fredericton an unbroken mile of wharfage. Time once was when that mile of wharfage was stacked high with new-sawn lumber and hogsheads of molasses and bales of cloth and kegs of rum and coils of rope and bundles of hides. It was a mile that steeped in the red dust raised by wagon wheels and iron shoes, and echoed the hoarse cries of teamsters whose curses and whips could take the hide off a truck horse.

New Brunswickers were busy building a province at home and a trade beyond the seas. Men were growing rich on long lumber and wooden ships. And in the local economy of that day the River was the greatest inland carrier.

#### ARRIVAL OF THE LOYALISTS

At the end of the War of Independence there had been many in the newly created United States who still acknowledged allegiance to George III. These "Loyalists" were largely of the judiciary, the clergy and the civil service and collectively they had comprised a considerable body in the cultural life of the American Colonies. Dispossessed of personal property, often in danger of personal violence, they had looked to far-off Nova Scotia and the little known Acadian

land as a refuge. In the summer of 1783 some six thousand of these émigrés came to the mouth of the River St. John. Many did not stay in the community which was growing about the river mouth but pushed inland to seek homesteads in the great valley beyond. Settlement had come to the River.

After 1763 the ancient and vaguely defined Acadia had been reconstituted into the County of Sunbury and administered from Halifax as a part of Nova Scotia. With the coming of the Loyalists there followed an agitation for the establishment of a separate province and in 1784 the sometime County of Sunbury was made the Province of New Brunswick. The capital was to be at Fredericton, 85 miles up-river from the Port of Saint John.

The first years in the new river settlements were hard ones. Rock and root yielded unwillingly to the ploughshare and the soil gave but a grudging return. Winters were severe and the cutting of firewood was an unending drudgery. Once in a while a trading sloop coasted up and down the river bringing molasses and rum from the Indies, pots, pans, needles and axes from the Old Country—or maybe even a bolt or two of precious gingham or calico. But aside from this there was little contact with the big world beyond the broad stream and the rolling hills that framed its valley.

*Top left:—Last brave out-rider of an age that is gone — the motorship D. J. Purdy which maintained regular service on the St. John River between Saint John and Fredericton until late September 1946.*

*Right:—The railway bridge at Fredericton swinging open for the D. J. Purdy*

Photo by R. H. Smith, Sackville, N. B.







Top to bottom:—  
Types of river boat.  
The slow old side-  
wheeler Olivette —  
originally the Sou-  
langes she was re-  
built and rechrist-  
ened in 1898 and  
operated for five  
more years; the stern-  
wheeler Hampton —  
prior to about 1845  
all the vessels had  
been side-wheelers;  
and the screw-pro-  
pelled Hampstead  
which operated  
mainly between  
Fredericton and  
Gagetown.



## STEAM NAVIGATION

Hint of a new era was heard during the legislative session of 1812. An act was passed by which John Ward, Robert Smith, George D. Berton, James C. L. Brenner, James Fraser and Lauchlan Donaldson were given the exclusive right to steam navigation of the St. John River for ten years, on their undertaking to place upon the River, within two years after the passing of the act, a steamboat capable of accommodating sixty passengers. War with the United States intervened and in 1813 the Company obtained an act extending the time for beginning their service to two years after restoration of peace with the United States, and at the same time extending their exclusive right to ten years after the completion of the boat.

The war over, the Company built and launched the *General Smyth* at Portland Point, Saint John, in 1816. Major-General George Stracey Smyth had been a military administrator and was later to be lieutenant-governor of the province. He may or may not have been impressed with this puffing, floating thing that had been named for him. But the Company had faith. Two more boats—the *General Ward* and the *St. George*—were on the River in 1817. These boats ran only one trip a week between the Port of Saint John and Fredericton. To make the 85-mile trip up-river required some fifteen hours.

But now the St. John bid fair to become in truth a main artery of trade for the folk who had settled along its shores; and the up-river settlements, whose life up to this time had been confined to a struggle for existence, might develop into thriving communities. It was a great vision. In 1819 New Brunswick's first steamboat company persuaded the Legislature that they should enjoy their exclusive privilege on the St. John River until March of 1829.

In 1826 the provincial administration engaged Robert Foulis, who would one day give the world the steam fog horn, to survey the river channel from Fredericton to Grand Falls. In two months he had submitted a detailed report, giving by levels the drop in the water for the entire distance.

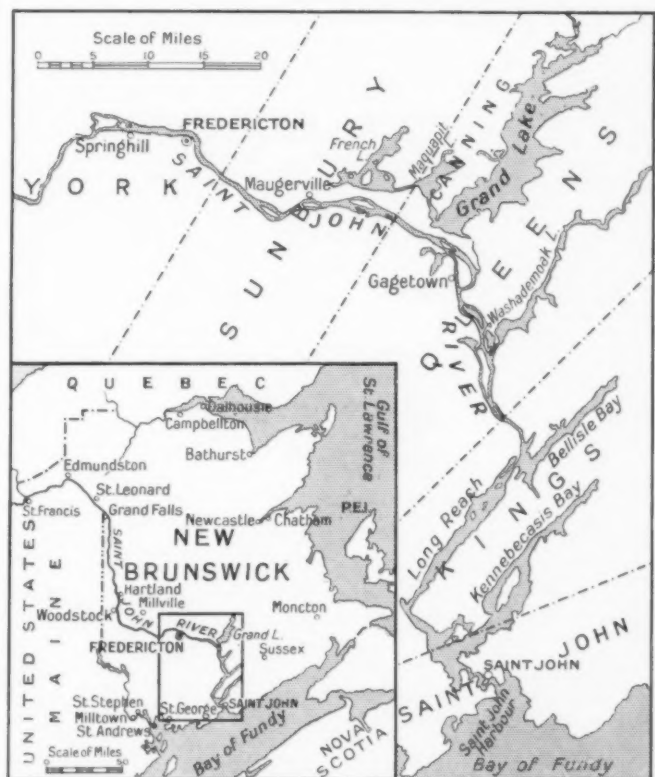
On the strength of his report Foulis was afterward engaged by Messrs. Ward of Saint John to superintend the building of the *John Ward*, which was finally launched in 1836.

The same year the old *St. George* was withdrawn from the river traffic but two new boats—the *New Brunswick* and the *Fredericton*—were launched. The *Fredericton* was the first boat on the river to be fitted with berths for night service. She was shortly followed by the *Meteor* as an opposition night boat.

## THE UPPER RIVER

In the same years came the *Novelty* and the *Waterwitch*, both high pressure boats put on the river by James Whitney of Saint John. It was the former which inaugurated the service between Fredericton and Woodstock, another 60 miles up-river.

From Saint John to Fredericton the river is mostly wide and deep and the current slow and steady. Above Fredericton, however, the stream grows narrow and the channel swift. To vessels of light draft the upper river was navigable until the turn of the century, by which time the cutting of the forests in the valley had removed a



Canadian Geographical Journal map



Three side-wheelers of the Union Line—The famous David Weston built in 1865 as the fle

natural reservoir which had formerly kept the river at a fair sailing level.

Although the little steamer *Woodstock* had made a vain attempt to reach the town for which she was named as early as 1832, successful navigation of the up-river route was not achieved until five years later. On April 30, 1837, the newly launched *Novelty* ran the 150 miles from Saint John to Woodstock between morning and evening. On another occasion she made the 170-mile round trip between Saint John and Fredericton in a day.

The *Novelty* was well named. Long of hull and narrow across the beam, she was swift but unwieldy and quite unsuitable for routine work.

Regular service between Fredericton and Woodstock was begun in 1845. That year the Craigs of Saint John launched the *Carleton* for George Connell, barrister, of Woodstock. Her light draft and powerful engines fitted her perfectly for the bars and shoals of the upper river and for some years she dominated the carrying trade between Fredericton and Woodstock. "You could sail 'er on the mornin' dew", old rivermen said, for she drew but fourteen inches of water.

Connell soon launched a second boat, the *John Warren*, but in striving for carrying capacity he defeated his own purpose. Being too heavy to compete with the lighter craft in the swift current, the *John Warren* was a financial loss.

Prior to the middle forties all the boats had been side-wheelers but toward the close of the decade the stern-wheelers began to appear. Prominent among them were the *Richmond*, the *Bonnie Doon*, the *Tobique*, the *Highlander*, the *Gazelle*, the *Ida Whittier*, the *Andover*, the *Florenceville* and the *Aberdeen*. Meanwhile Ben Tibbits had launched the famous *Reindeer*.

#### TIBBITS' COMPOUND ENGINE

Benjamin Franklin Tibbits\*, youngest son of Andrew Tibbits, was born in the Parish of Canning, in the County of Queens, in the Province of New Brunswick. When fire destroyed the homestead in 1822 the family moved to Grand Lake. Eight years later they made a second move, this time to Fredericton. After attending school for four years young Benjamin was apprenticed to the watch-making trade, first under a Mr. Robertson of Woodstock and later under Benjamin Woolhopter of Fredericton.

Like most young men in the river communities, Tibbits early felt the lure of the mighty flood. But to him the white hulls that sailed upon it were not mere objects of adventure. To him they were machines—machines which as yet were far from perfect. Despite the recent performances of the *Novelty*, most of the boats were still slow of speed and jerky of movement. The earlier boats had been powered with oscillating cylinders. The cross-head and connecting rod had not then come into general use and the cylinder was set on a pivot so that it could

\*Editor's note: There is some difference of opinion as to the correct spelling of this name. The Historic Sites and Monuments Board of Canada has come to the conclusion that it should be spelt "Tibbits", but it will also be encountered as "Tibbitts" and "Tibbetts".





the fleet of river palaces, the *Fawn*, built in 1867, the *May Queen* launched in 1869.

turn a bit each way or "oscillate" in order to effect the rotary motion of the stroke. The oscillation opened and closed the valve and there was an expansion of steam in one end of the cylinder only. Since there was only one large cylinder and only one expansion per revolution of the engine, the strokes were timed far apart and the old hulls creaked from stem to stern with each fitful puff.

Gradually the cross-head and connecting rod came into more general use. Cylinders were then cast solid in the engine block and they could take an expansion of steam on both the outward and inward thrust. Gradually, too, cylinders came to be operated in pairs rather than singly.

Young Tibbits, daydreaming over Benjamin Woolhopter's neglected watches, was still not satisfied. On his frequent visits to the engine rooms of steamboats he observed that the exhaust steam from the cylinders escaped under considerable pressure. Why, then, he argued, could the exhaust steam from the small high-pressure cylinders not be recaptured in a larger low-pressure cylinder? Fredericton had no answer to that and Tibbits soon sought wider experience in the United States. After apprenticeship in various workshops and foundries he perfected his plans for a compound engine. It was one thing to perfect plans on paper but it was quite another to materialize them in wood and iron. To prove his theory Tibbits would not only have to cast an engine, he

would also have to build a boat in which to install it. When it came to boat-building, the investing public preferred to remember Tibbits as a fair watchmaker. One Thomas Pickard, however, wanted to see the new boat, and his interest was so keen that he privately financed Tibbits' undertaking. Through the winter of 1842 the young inventor laboured at the building of the *Reindeer* on the river shore opposite Fredericton. Then with spring came launching day. On a sunny afternoon the townsfolk came forth, the more friendly to doubt, the majority to scorn this ridiculous product of a watchmaker's imagination. At the appointed time the grey-white puffs began to belch from her stack and her paddlewheels began to churn as the *Reindeer* held her course out into mid-stream.

The compound marine engine had been given to the world.

In 1846 Ben Tibbits and a brother, Harry M., built the *Benjamin Franklin* for service between the city of Saint John and points on Grand Lake.

It was beside his native Grand Lake that Tibbits lay down to die. In his few years of life his creative genius had earned him little of this world's goods. A legend persists that the *Benjamin Franklin* burned on the lake on the same cold autumn night as her builder died in a lonely house upon the shore. The inventor's grave was marked by a rude wooden cross which bore the simple inscription "Engineer Tibbits". Long ago the cross



The engines of Tibbits' famous Reindeer worked their last here. A deck scene aboard the tugboat Admiral, in which the world's first compound marine engine remained in use until 1913, having operated for more than 50 years.

disappeared and for many years the grave was marked only by a solitary oak. A monument unveiled by the York-Sunbury Historical Society on June 26, 1937, now marks the spot.

#### HATHEWAY & SMALL

Tibbits' compound engine had given the steamboat an assured place in the growing industrialism of the nineteenth century. At the same time an ever-increasing volume of trade into and out of the river communities had made steamboat operation a big business by 1850. The greatest of the steamboat "lines"—that known as Hatheway & Small—dates from the mid-year of the century.

In 1848 Frederick W. Hatheway had built the *Forest Queen*, a vessel of 320 tons, at Springhill about six miles above Fredericton. When Otis Small bought a half interest in the boat two years later a partnership was born.

About this time two American-built boats appeared on the river—the *James D. Pierce* and the *Ben Beveridge*—and the partners

promptly acquired the former. They rounded out the year by building the *Anna Augusta*, 350 tons, at Fredericton. In 1851 they built the *Union*, 400 tons, at Carleton, Saint John; and they bought the already famous *Reindeer*. They also bought the small steamer *Madawaska*, which was running above Grand Falls as far northwest as the village of St. Francis. In 1853 they built the small stern-wheeler *Richmond* for the upper route and in 1855 they purchased the *Woodstock*. In 1853 they had also bought the churn-engine steamer *St. John*, a vessel of nearly 800 tons. They operated her for a decade but her tonnage made her too heavy for the river traffic.

#### THE GREAT BOAT RACES

The *Forest Queen* which Fred Hatheway had built in 1848 was for some time considered the pride of the fleet. Men soon began to couple her name with the *Reindeer* and so the first of the great boat races was run. On Monday, May 6, 1850, the two ran a course from Fredericton to Woodstock. The *Reindeer* made the 60 miles up-stream in exactly eight hours, beating her rival by some forty minutes.

More important was the fact that the compound engines of the *Reindeer* enabled her to make the trip on four cords of wood against nine burned by the *Forest Queen*. Perhaps Fred Hatheway and Otis Small remembered this. At any rate the *Reindeer* was flying their pennant by 1851.

Just four weeks later the *Reindeer* entered a three-cornered race that was to be the

The tablet on the monument marking the grave of Benjamin Tibbits at Scotchtown, N.B.





Above:—The steamer Majestic lands a picnic crowd at Carter's Point on the lower reaches of the river. A single-screw boat built in the late 90's, she operated on the St. John River and Grand Lake until the end of the season of 1942.



Above:—Captain (centre) and crew of the Majestic in 1913.

Right:—In the dining saloon of the Victoria, 1902, showing cook, stewards and waitresses. These two photos courtesy Captain H. C. Crabbe, Gagetown, N.B.



doom of one of her rivals. Along with the *James D. Pierce* and the *Ben Beveridge* she was then plying the Fredericton-Woodstock route and Sunday, June 2, found all three boats lying over at Fredericton.

When the *Ben Beveridge* had tied up on Saturday evening her Captain had noticed that his engineer was drunk. So he had had him arrested and locked up to ensure his being sober the following Monday morning. In his cell over the week-end the engineer plotted his revenge. He would jam the safety valve and blow up the *Ben Beveridge*, Captain and all.

This would be easy. The valves in those days were not of the modern spring type.

They were of the old beam-and-plunger variety. The farther out on the beam the weight was placed, the more steam was required to raise the plunger. If the weight had been jumped out a couple of notches beyond the capacity of the boiler, probably nobody would notice the difference.

Springhill, only six miles above Fredericton, was the point at which the log drives were rafted and turned over to the towing companies. That morning it happened that





The Elaine, a screw propelled boat that was launched into the dwindling river traffic in the late 90's.

there were a large number of log drivers at Springhill awaiting passage back up-river. The prospect of picking up these passengers lent an added spice to the race.

The three vessels slipped their lines almost in the same moment and set out for Springhill and the log drivers, the water foaming white astern and pitch pine crackling beneath the boilers. The *Reindeer* was just breasting the *Ben Beveridge* off Government House Point when an explosion split the air and the *Ben Beveridge* went to steamboat heaven in a cloud of smoke and steam. The engineer had succeeded only in killing the unsuspecting fireman who had stoked the boiler while the gauge crept ominously upward.

Six years later a second boiler explosion claimed another participant in that ill-fated race. In 1856 Hatheway & Small were running the *James D. Pierce* and the *Richmond* day-and-day-about on the Fredericton-Woodstock route. On Thursday, May 30, the *James D. Pierce* (Captain Wood) had just left Morehouse Landing, about 30 miles above Fredericton, when the boiler exploded. Robert Miller, the pilot, and a raftsmen named Wark, of the *Tobique*, were killed instantly. A woman victim was taken to Fredericton aboard the *Richmond* and died there during the night.

Meanwhile the *Forest Queen* had continued in service and when in 1860 the Prince of Wales (later Edward VII) visited

the country the *Forest Queen* bore the Royal Party from Saint John to Fredericton. She was finally overtaken by a fate common to many of the river steamers. On a dull autumn morning, just below Fredericton, she burned to her waterline.

In 1862 the famous *Reindeer* was rebuilt and her name changed to the *Antelope*. Even swifter than before, the rechristened steamer was soon matched with the *Tobique* on a round trip from Fredericton to Woodstock. On the single trip the *Antelope* landed a full hour and a half ahead of her rival and she finished the round trip of 130 miles in less than eleven hours, maintaining an average speed of twelve miles per hour for eleven hours at a stretch. Faster than a horse could run. That was travelling.

The *Antelope* continued to operate for a number of years and when she was finally dismantled the original *Reindeer* engines were installed in the tugboat *Admiral* where they remained in operation until 1913.

In 1863 Hatheway & Small sold the *St. John* and the *Union* to the United States Government to be used as blockade runners. In this service the *St. John* was eventually lost off Cape Hatteras.

Frederick W. Hatheway died in 1866. Soon afterward Otis Small entered a new partnership with a brother of the deceased, Captain Charles H. Hatheway. The captain had been master of the *Forest Queen* from 1849 to 1860 and had held a one-third interest in her from

crew.  
that  
into  
river  
late

The side-wheeler  
Crystal Stream oper-  
ated by D. J. Purdy.



1854. After the reorganization the properties bore the name of the Union Line. Almost immediately the new partners undertook the building of a string of "river palaces". Before the boating season of 1866 was ended they had launched the *David Weston* (765 tons); in 1867 they launched the *Fawn* (621 tons) and in 1869 the *May Queen* (502 tons).

#### THE LUNTS

A sturdy rival of Hatheway & Small was old Enoch Lunt. He had bought into the old *New Brunswick* as early as 1840. Later he purchased the little steamer *Lawrence* which ran first on Grand Lake and later on the main river between Saint John and Fredericton. Then he built the *Heather Bell* (300 tons) in the Carleton yards at Saint John, only to operate her for five years and then see her burn to the waterline.

In 1864 Enoch Lunt took his two sons—Joseph A. and Reuben G.—into partnership and thereafter they operated as the Express Line. The following year they built the *Olive* (450 tons) in the Carleton yards. The senior partner died in 1873 and the sons carried on the business under the title of Enoch Lunt & Sons.

River captains were men to be reckoned with in those days and a valley farm boy became a man the day the master of a river steamer called him by name. Pursers, too, were regarded as men of the world. Most of them visited Saint John and Fredericton and Woodstock every week. They were full of

the gossip of hotels and travelling folk. They talked casually of Barnum's Museum, of the Boston Strong Boy and of Jenny Lind. Yes, they would mail a letter in Saint John. Or they would buy a farmer a keg of nails or a gallon of turpentine in Fredericton and put it ashore at Maugerville the next trip down. Some of them had even been deep water sailors when they were young and had made a voyage or two "outside".

As late as the turn of the century there were several hotels in the North End of Saint John—the Lorne, Clarke's and Ferris's—that did a thriving business from the traffic of the river boats. A family excursion to the great Exhibitions at Fredericton or Saint John was then an ample reward for a summer's work on the farm. There would be the rising in the half light of dawn, an excited breakfast and then the seemingly endless wait at the wharf. Finally there would come a long-drawn whistle from beyond "the point" and in a moment more a gleaming white hull would appear. And those hulls themselves—they breathed the very breath of the communities they served. From below decks in those crisp autumn days of the fair excursions came the earthy smells of barrels of new potatoes and fresh apples, of sides of beef and carcasses of pork; and permeating all else the pungent odour of crackling pitch pine and hot machine oil. At length there would be the midday meal in the dining saloon and real waitresses in black dresses with

white aprons and caps. There never was the like ashore—not even at the hotel in Gagetown.

#### THE RAILROADS

But even while Otis Small and Enoch Lunt were blowing boilers to take the carrying trade away from each other, a new wonder had appeared which would one day leave the river itself all but deserted. Strange cargo had come to Fredericton aboard an up-river steamer one summer's afternoon in 1868. Dismantled and crated was a locomotive—the *Oromocto*—intended for service on the north end of the newly begun Fredericton Branch Railway.

Her advent had split the world of river folk well nigh in two. Some saw in the new-fangled railroads only a curiosity doomed to short-lived existence. But there were others.

At any rate the opening of "The Branch" on November 18, 1869, gave Fredericton an overland connection with the port of Saint John.

By 1871 the lines of the New Brunswick Railway had penetrated the St. John valley as far north as Edmundston. Within the year steamboat timetables announced that: "Connections will be made with the New Brunswick Railway for and from Millville, Woodstock, Hartland, Grand Falls, etc."

#### LATTER DAYS

The world of the river folk would come to an end, but the decline would be gradual. The new railroad from Fredericton to Saint John ran through the high country far beyond the valley and the river communities still depended on the steamboats to maintain their commerce with the outside world.

Boats like the *Aberdeen* and the *Florenceville* continued to serve the up-river communities into the twentieth century. As late as 1897 George F. Baird and his associates had built the *Victoria*, perhaps the most beautiful boat that ever plied the River. Concurrently there also appeared the *Elaine* and the *Champlain* and the single-screw steamer *Majestic*, the last named remaining in operation on the River and on Grand Lake until the end of the season of 1942.

Early in the present century the late D. J. Purdy became interested in the River traffic and operated the steamers *Sincennes* and *Crystal Stream*. When the *Sincennes* burned he took her undamaged steel hull, built another superstructure on it and christened the new boat the *D. J. Purdy*. In 1924 he replaced the first vessel to bear his name with a second, this time a motorship.

D. J. Purdy died when the motorship had been in operation only part of a season. The business was continued by a son, J. C. Purdy, until the winter of 1927. At that time a large share was purchased by the Taylor-Gault interests. In the spring of 1929 Eastern Canada Coastal Steamships brought the few remaining boats on the St. John River and its tributaries under one management.

On a grey morning in late September last year the *D. J. Purdy* sailed away from her wharf in Fredericton and disappeared between the purple hills downstream. "She's laid up for the winter," a few people said when they noticed she did not return.

They did not know then that for the river boats there would be no more spring.

*The side-wheeler Victoria. Built as late as 1897, she was the last and perhaps the greatest of the river palaces*





## Alexander Henry

by LAWRENCE J. BURPEE

**T**WO MEN of the same names were prominent in the fur trade of Western Canada and, as a further coincidence, both left journals of their remarkable experiences. In both cases the journals were published, the most readily available editions being those of James Bain, for the Alexander Henry with whom we are now concerned, and Elliott Coues for his nephew.

Alexander Henry, usually called the Elder, was born in New Jersey in 1739 and died in Montreal in 1824. Of his eventful career, some of which has been described by Francis Parkman in *The Conspiracy of Pontiac*, there is described here only one incident on the lower Saskatchewan, which illustrates the relations between white traders and explorers and the Indians, and is not without an element of somewhat grim humour. The hero of the piece certainly was not Henry, but rather was a Cree chief named Chatique, whose village was not far from the town now known as The Pas. Chatique, whose technique resembled that of the robber barons of the Rhine, collected tribute from the white traders.

"At eighty leagues from Fort de Bourbon, at the head of a stream which falls into the Saskatchewan and into which we had turned", says Henry in his narrative, "we found the Pasquayah village. It consisted of thirty families, lodged in tents of a circular form and composed of dressed ox-skins, stretched upon poles twelve feet in length, and leaning against a stake driven into the ground in the centre.

"On our arrival the chief, named Chatique, or the Pelican, came down upon the beach attended by thirty followers, all armed with bows and arrows and with spears. Chatique was a man of more than six feet in height, somewhat corpulent and of a very doubtful physiognomy. He invited us to his tent, and we observed that he was particularly anxious to bestow his hospitalities on those who were the owners of the goods. We suspected an evil design but judged it better to lend our-

selves to the treachery than to discover fear. We entered the lodge accordingly, and soon perceived that we were surrounded by armed men.

"Chatique presently rose up and told us that he was glad to see us arrive, that the young men of the village as well as himself had long been in want of many things of which we were possessed in abundance; that we must be well aware of his power to prevent our going farther; that if we passed now he could put us all to death on our return; and that under these circumstances he expected us to be exceedingly liberal in our presents; adding, that to avoid misunderstanding he would inform us of what it was that he must have. It consisted of three casks of gunpowder, four bags of shot and ball, two bales of tobacco, three kegs of rum, and three guns, together with knives, flints and some smaller articles.

"He went on to say that he had before now been acquainted with white men and knew that they promised more than they performed; that with the number of men which he had, he could take the whole of our property without our consent; and that, therefore, his demands ought to be regarded as very reasonable; that he was a peaceable man and one that contented himself with moderate views, in order to avoid quarrels; finally, that he desired us to signify our assent to his proposition before we quitted our places.

"The men in the canoes exceeded the Indians in number, but they were unarmed and without a leader; our consultation was, therefore, short, and we promised to comply. This done, the pipe was handed round as usual, and the omission of this ceremony on our entrance had sufficiently marked the intentions of Chatique. The pipe dismissed, we obtained permission to depart, for the purpose of assorting the presents; and these bestowed, or rather yielded up, we hastened away from the plunderers.

"We had supposed the affair finished, but before we had proceeded two miles we saw a canoe behind us. On this we dropped astern to give the canoes that were following an opportunity of joining, lest, being alone, they should be insulted. Presently, however, Chatique in a solitary canoe rushed into the

midst of our squadron and boarded one of our canoes, spear in hand, demanding a keg of rum and threatening to put to death the first that opposed him. We saw that our only alternative was to kill this daring robber or to submit to his exaction. The former part would have been attended with very mischievous consequences, and we therefore curbed our indignation and chose the latter. On receiving the rum, he saluted us with the Indian cry, and departed."

\* \* \*

#### EDITOR'S NOTE-BOOK

Born in Ridgeway, Ontario, Edmund J. Zavitz's interest in forestry dates from his earliest boyhood, when he roamed the countryside round his village collecting insects and learning about trees. After his school days, Mr. Zavitz took on a number of local jobs before going to McMaster University to study, but his interest remained with forestry. After graduating in 1903 he took post-graduate courses in forestry at Yale and Michigan Universities and then joined the faculty of Ontario Agricultural College where he was appointed Lec-

— Peter Pond\* was one of the traders with Henry on this expedition, and must have shared in the humiliating experience described above. His journals for the Saskatchewan journey have been lost, which is regrettable for more than one reason. It would have been interesting to learn how this hot-tempered traveller would have explained the pusillanimity of himself and his companions.

\*See Canadian Geographical Journal, November 1946.

turer in Forestry in 1905. He soon began to put his ideas into effect, starting with a nursery and distribution of trees. In 1909 he started at Norfolk the first Forest Station in Ontario. In 1912 Mr. Zavitz was transferred from the Department of Agriculture to the Department of Lands, Forests and Mines as Ontario's first Provincial Forester, and later, as Deputy Minister, he developed the Forest Service to its present commanding position. The basic principles of Mr. Zavitz's work have been the necessity for forest-survey programs, an efficient fire-fighting organization and extension of re-

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forestation programs. He was instrumental as early as 1924 in initiating the use of aircraft to improve forest conservation performance and accelerate survey programs. In 1928 Mr. Zavitz represented the province as a delegate to the British Empire Forestry Conference in Australia where, with other Empire forest experts, he spent five months studying forestry conditions in Australia and New Zealand. A firm believer in the efficacy of demonstration, he stays at the helm in leading the province to real application of forestry practice as adviser and active Chief of the Division of Reforestation. An accomplished photographer, Mr. Zavitz presents in his article in text and picture some of the fruits of four decades of outstanding constructive public service.

\* \* \*

The St. John River, about which he writes in this issue, played a large part in the boyhood of Fred H. Phillips. During his schooldays in Fredericton, New Brunswick, the river provided his recreations—fishing, swimming and skating. After a year on the news staff of the *Fredericton Daily Gleaner* Mr. Phillips joined the New Brunswick Government Bureau of Information, of which he was assistant director at the beginning of the war. Joining the army in September, 1939, he served overseas and since the war has been occupied with freelance writing. His preference is for biographical and historical work and he likes to explore what he calls "the by-ways of history", particularly as they relate to his native province.

\* \* \*

W. H. Owens, a contributor from England, has devoted himself to writing since leaving school, except for a period of three years when he was book editor for a large firm of British publishers in London. Mr. Owens has specialized as a writer of first-hand articles on the British scene, industries, crafts and customs. A member of the Institute of Journalists, he has contributed to many periodicals in Great Britain and the Empire, and has worked for the British Council and the Travel Association of Great Britain. He has travelled extensively throughout the British Isles and in Europe.



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## THE CANADIAN GEOGRAPHICAL SOCIETY

### ANNUAL GENERAL MEETING

The eighteenth Annual General Meeting of The Canadian Geographical Society was held on February 21st, 1947, in the Lecture Hall, National Museum of Canada, Ottawa, Mr. J. A. Wilson, Vice-President, presiding.

The minutes of the seventeenth Annual General Meeting were approved, following which the Vice-President proceeded with the brief business meeting. Mr. Wilson spoke with regret of the loss the Society had sustained in the death of Dr. Lawrence J. Burpee, one of the founders, first editor of the *Journal* and, until the time of his death, an active Director. The Vice-President in his address then outlined the principal activities of the Society during the past year.

"Publication of the *Canadian Geographical Journal*," he stated, "continues to be the main activity of the Society. This useful organ for the dissemination of geographical information has maintained a high standard and, despite difficulties arising from curtailment of paper allocation, strikes and increased expenses, over two hundred and twenty-five thousand copies were printed, fifty thousand more than in 1945. Sales to news-stands in Great Britain increased from four thousand in 1945 to forty-four thousand in 1946. . . . The demand for the Society's reprint services was again increased. Some one hundred and fifty thousand copies of fourteen different articles were published in booklet form. Distribution of these booklets to all parts of the world is of great value in promoting the Society's objective of making available authentic information about Canada. . . . Complete sets of *Journals* were given to libraries in war-ravaged Allied countries in Europe, as well as to China and the Soviet Union."

The Vice-President stated that the Society's financial position was good and that further appropriations had been made to the research fund. Membership had increased substantially during the year.

Grants from the research fund had been made to assist Dr. Barbeau in the preparation of a book on which he was working and to establish two scholarships for the McGill summer school in geography which will be inaugurated in 1947.

The ten retiring Directors were re-elected to office for a further three-year term, and one new Director, M. W. MacKenzie, Deputy Minister, Department of Trade and Commerce, Ottawa, was elected. The following amendment to the by-laws of the Society was adopted:

That the present Subsection 1 of Section XVI of the by-laws be repealed, and that the following be substituted therefor:

1. The Annual General Meeting of the Society shall be held in the City of Ottawa during the latter half of the month of February on a day and date which shall be selected by the Board of Directors on or before its regular meeting held in December prior to the Annual General Meeting; and notice thereof shall be given to the Members of the Society not less than thirty days before the date thus selected. Publication in the January number of the Society's magazine shall be sufficient notice for this purpose. Twenty (20) Corporate Members shall constitute a legal quorum.

At the conclusion of the business part of the meeting, Mr. Wilson introduced Professor G. H. T. Kimble, Chairman of the Department of Geography at McGill University and a Fellow of the Society. Professor Kimble then gave a most interesting address entitled "Life on the Pioneer Fringe of North Africa". Dealing with the primitive life of the Berbers of the Atlas region, Professor Kimble illustrated his talk with slides made when he was living among these people. He gave a graphic description of the harsh environment of the Berbers, their precarious livelihood and the economic problems which arose out of the impact of civilization under the French regime on these tradition-bound people.

On behalf of the Society Dr. Charles Camsell thanked Professor Kimble for his interesting and informative lecture.

Immediately following the General Meeting a meeting of the Board of Directors was held at which the President and other Officers for 1946 were re-elected and the Editorial Committee for 1947 was appointed, including two new members: Dr. H. A. Innis, Professor of Political Economy, University of Toronto, and Dr. J. E. Robbins, Chief Education Statistician, Ottawa. (See Directors' page.)